

Task 4.0 METROLOGY

a. General requirements - The Contractor shall comply with NASA Equipment Management NPD 4200.1, as revised; NASA Equipment Management System (NEMS) User's Guide for Property Custodians, NPG 4200.2B, as revised; NPG 5300.4 (2b-3), Management of Government Quality Assurance Functions for NASA Contracts, dated December 24, 1997; NPD 8730.1, Metrology and Calibration, dated May 22, 1998; Metrology Program, Product Assurance Instruction (PAI) 355, as revised. The ISO 9000 International Quality Management and Quality Assurance Standards requirement is now in the implementation phase at NASA. Metrology Services have been ISO 9000-compliant since mid-year 1998. The Contractor shall comply with NASA Quality Management System Policy, ISO 9000, NPD 8730.3, as revised; and the Handbook for the Interpretation and Application of American National Standard Institute/National Conference of Standards Laboratories (ANSI/NCSL) Z540-1, as revised

b. Description of work - The Contractor shall provide all services and necessary equipment not identified as IAGP (Refer to Attachment B) to support the day-to-day metrology services for Glenn research and development activities. The Contractor shall provide the necessary administrative requirements to establish subcontracts when in-house repair or calibration capabilities are insufficient.

The Contractor shall process all newly acquired Inspection, Measuring and Test Equipment (IMTE), all factory returns, warranty and service repairs. All equipment and materials received will be processed in accordance with specifications detailed in task 1.0 Logistics. The Contractor shall maintain the Glenn IMTE tracking database. This includes issuing calibration recall notices for all IMTE contained in the database and informing the Office of Safety and Assurance Technologies (OSAT) when there is no response. All database information shall be updated as required by CLP 3.5.2 Control of Inspection, Measuring and Test Equipment.

Metrology Services Calibration Facilities are located in Building 21 and Building 5 on NASA property and consist of five environmentally sound work laboratories. The facility located in Building 21 contains four laboratories - Primary Electrical, Primary Pressure, General Calibration and Special Projects. Building 5 contains the Flow Laboratory.

Refer to <http://ltwebp.lerc.nasa.gov/mshome.htm>.

4.1 Calibration Services

a. General requirements - The Contractor shall comply with the general requirements specified in Task 4.0.a., as applicable.

b. Description of work - The Contractor shall inspect all new Government-provided or Contractor-acquired instruments; repair and maintain instrument service history and maintain a systematic instrument maintenance and calibration program for specified instruments.

The Contractor shall troubleshoot, repair, assemble and maintain Government research and test instruments including exhaust gas analysis systems. The Contractor shall generate and maintain

instrument and maintenance data for evaluating repair effectiveness. This effort may require travel to on-site facilities when equipment to be calibrated and/or repaired must remain in the facilities. Employees who perform this task shall maintain a security classification of *SECRET*. The Contractor shall operate and maintain on-site fluid-flow calibration systems.

The Contractor shall be responsible for the periodic calibration and certification of the Government-supplied reference standards by, or traceable to, the National Institute of Standards and Technology (NIST). Work under this task is limited to scheduling the calibration of these standards consistent with established recall procedures and providing suitable packaging and transportation of the reference standards to and from the servicing laboratory.

The Contractor shall institute and maintain a system of accounting and inventory control for all items of hardware to be repaired and/or maintained.

The Contractor shall inspect new research and test equipment to ensure compliance with manufacturers' specifications and shall use Government-supplied or approved procedures for instrument testing. Where no procedures exist, the Contractor shall prepare new procedures and submit them to the TR for approval.

User evaluations shall be generated with each work order and sent to the customers upon completion of the work order.

c. Quality standards - The Contractor shall comply with the general requirements specified in paragraph a. of this task.

d. Schedule - IMTE shall be picked up from users for calibration and repair, and delivered to users after calibration and repair daily. Calibration shall be completed in accordance with the priority negotiated with the customer. Priorities are as follows.

*New or Original Equipment Manufacturer (OEM) Repaired Equipment
Acceptance Testing*

Priority A	Within ten working days
------------	-------------------------

General Repair and Calibration

Priority B	One to five calendar days
Priority C	Six to 18 calendar days
Priority D	19 to 33 calendar days
Priority E	34 to 63 calendar days
Priority F	64 to 93 calendar days

e. Documentation - All information related to work orders shall be entered into the calibration laboratory database daily. This includes but is not limited to the generation of new work orders; the close out of completed work orders, and the change of status of work in progress. The information contained in the calibration laboratory database shall be maintained completely and accurately. Equipment pick and delivery manifests shall be generated daily by the contractor.

User evaluations shall be generated with each work order and sent to the customer upon completion of the work order. The Contractor shall also generate a weekly chargeback report for the Resource Analysis and Management Office (RAMO). This report shall facilitate the transferring of funds based on job order numbers. The Contractor shall send out mandatory recall notices monthly as a reminder to customers on pending preventative maintenance and/or calibrations. The Contractor shall provide OSEMA, by the 15th day of each month, with a report listing noncompliance to mandatory recall notices. The Contractor shall provide the TR, by the 10th day of the following month, a monthly production report that shows overall production of Calibration Services by individual work centers. The Contractor shall maintain reports and documentation in database files for review by the TR. The Contractor shall account for productive time in the Cal Lab database, Labmate.

4.2 Instrument Pool

- a. General requirements - The Contractor shall comply with the general requirements specified in Task 4.0.a., as applicable.
- b. Description of work - The Contractor shall operate and maintain the Glenn Instrument Pool of electronic and electromechanical instrumentation. The Contractor shall receive, store, issue and deliver pool equipment that requires repair, calibration and/or acceptance testing. The Contractor shall also identify and process for redistribution or disposal those pool items that are excess, obsolete, damaged, beyond economical repair (BER) or no longer required for Glenn's use. The Contractor shall assist the TR in determining future pool equipment requirements and shall also maintain daily tracking of prescribed pool equipment using existing software. The Contractor shall maintain the Instrument Pool database.

The contractor shall develop an on-going marketing plan for the purpose of integration and sales of IMTE to the research community in support of the LTID market economy to promote the use of the instrument pool and the calibration facilities. This will involve understanding the LTID market economy process and monitoring the data to insure the metrology market economy goals are being met.

Marketing will include the interface with the Glenn technical community to understand their measurement and hardware needs for research support. All instrument pool requests shall be documented to insure user's needs are met with the instrumentation available to issue from the pool. If equipment is not available, the Contractor shall maintain a log and insure IMTE is recommended for purchase during the following forecast period, or if that instrument is returned to the pool from the user community, that it will be offered to meet the user's needs.

The Contractor shall be familiar with the basic measurement capabilities of different electrical and physical IMTE and associated groups of equipment in order to recommend the appropriate IMTE that meets the customers' needs. These needs will need to be effectively communicated to the Equipment Service Representative(s). Basic knowledge shall include an understanding of AC and DC voltage and current; frequency and time; resistance; video cameras and video tape recorders; pressure transducers; power supplies; thermocouple temperature, and office equipment.

c. Quality standards - The Contractor shall comply with the general requirements specified in paragraph a. of this task. The Contractor shall maintain an error free on-line database of available instrumentation for customer access. The Contractor shall maintain the Instrument Pool data in the NEMS database.

d. Schedule - A selection of commonly used pool equipment shall be available for immediate access by the customers. Hours of operation shall be Monday through Friday, 8 a.m. to 4 p.m.

e. Documentation - The Contractor shall provide an annual report on the physical inventory of the Instrument Pool. The report shall be submitted by the last day of the fiscal year. The Contractor shall maintain the Instrument Pool equipment database by using existing Clarion database software. A monthly report on all transactions for the Instrument Pool shall be submitted to the TR by the 10th day of the following month.

The contractor shall provide monthly reports documenting the types of equipment issued to the users, the IMTE being returned, the associated costs, verifying the validity of task numbers and generating full cost accounting chargeback reports. Reports shall be submitted to the TR by the 10th day of the following month.

4.3 Dimensional Calibration

a. General requirements – The Contractor shall comply with the general requirements specified in Task 4.0.a., as applicable.

b. Description of work – The Contractor shall test, calibrate, and repair mechanical dimensional, electromechanical and electronic measuring, recording, and indicating instrument and equipment for conformance to established standards and assist in formulation of calibration standards. The Contractor shall plan sequence of testing and calibration procedures for equipment according to blueprints, schematics, technical manuals, and other specification. The Contractor shall set up standard special purpose laboratory equipment to test, evaluate, and calibrate other instruments and test equipment, using hand tools, and inspect components for defects. The contractor shall measure parts of conformity with specifications, using micrometers, calipers, and other precision instruments. The Contractor shall align, repair, replace, and balance component parts and circuitry. The Contractor shall reassemble and calibrate instruments and equipment. The Contractor shall devise formulas to resolve problems in measurements and calibrations. The Contractor shall use, maintain, and care for reference, transfer and working standards. The Contractor shall assist engineers, supervisors, and area coordinators in formulating test, calibration, repair and evaluation plans and procedures to maintain precision accuracy of measure, recording and indicating instrument and equipment.

The Contractor shall follow Glenn Center level procedures, work instructions, and all procedures, policies and practices of the Glenn Research Center. If and when the time permits, the dimensional tech will be required to train in other areas of the Calibration Lab for future cross-utilization. In addition, the dimensional person will be required to cross-train other lab personnel in dimensional calibration to allow coverage in their area during their absence and

utilize/cross-utilization in the Demensional Lab. This includes, but is not limited to pressure, flow, mass and electrical calibration.

c. Quality standards – The contractor shall comply with the general requirements specified in paragraph a. of this task.

d. Schedule – Contractor shall comply with the same schedule requirements identified in task 4.1.d.

e. Documentation – The Contractor shall comply with the same documentation requirements identified in task 4.1.e.

(End of Task 4.0)